Release Notes

HP StorageWorks Fabric OS 3.1.3a

Third Edition (September 2004)

Part Number: AA–RUQYC–TE

This document contains information about Fabric OS version 3.1.3a. In the event of conflicting information between these Release Notes and other documents in this product release, the Release Notes take precedence.

For the latest version of these Release Notes and other Fabric OS 3.1.1x documentation, access the HP storage web site at: http://www.hp.com/country/us/eng/prodserv/storage.html.

Fabric OS 3.1.3a Release Notes
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About This Document

This section identifies the audience of these Release Notes and provides a high-level description of the information it contains.

Release Notes Information

These Release Notes cover the following major topics:

Audience

These Release Notes are intended for systems administrators and technicians who are responsible for installing, operating, and maintaining Fabric OS version 3.1.3.

Overview

HP Fabric OS 3.1.3a is a maintenance release containing fixes to a number of issues, as well as the following enhancements and new features:

- Reduced fabric configuration downtime

  Extended-edge PID for mixed-fabric— eliminates host reboot for hosts that statically bind PIDs

- Improved fabric diagnostics

  Supports the `pathInfo` command, which displays path information between any two ports of a fabric

- Improved manageability and ease-of-use

  Advanced Web Tools improvements

Supported Switches

Fabric OS v3.1.3a supports the following switches:

- HP StorageWorks SAN Switch 2/8
- HP StorageWorks MSA SAN switch 2/8
- HP StorageWorks SAN Switch 2/16

Technical Support

Contact Hewlett-Packard support for hardware, firmware, and software support, including product repairs and part ordering. To assist your support representative and to expedite your call, have the following information available:

- Technical support contact number, if available
- Switch model
- Switch operating system version
- Error messages received
- Output from `supportshow` command
- Detailed problem description and specific questions
- Description of any troubleshooting steps already performed and results

Documentation

Additional documentation, including white papers and best practices documents, is available at the HP web site: http://welcome.hp.com/country/us/eng/prodserv/storage.html.

Note: HP has made every effort to provide you with the most up-to-date Web retrieval procedures available at time of print. Note, however, that Web page links are subject to change.

To access the technical documentation:

1. Locate the **Networked storage** section of the Web page.
2. Under **Networked storage**, locate the **By type** subsection.
3. Click **SAN infrastructure**. The **SAN infrastructure** page displays.

4. Locate the **Fibre Channel Switches** section.
5. Locate the **B-Series Fabric** subsection.
6. Click the name of the appropriate switch. The switch overview page displays.
7. Locate the **Product information** section.
8. Click **Technical documentation**.
9. Select the applicable documents.

For information about Fibre Channel standards, visit the following web site: http://www.t11.org.

Standards Compliance

HP products conform to these standards in a manner consistent with accepted engineering practices and procedures. In certain cases, HP may add proprietary supplemental functions to those specified in the standards. We verify conformance with Fibre Channel Standards by subjecting our switches to SANmark Conformance Tests developed by the Fibre Channel Industry Association. Our switches have earned the SANmark logo indicating such conformance. SANmark is a limited testing program and does not test all standards or all aspects of standards.

HP Fabric OS 3.1.3a conforms to the following Fibre Channel Standards:

- FC-AL ANSI X3.272: 1996
- FC-AL-2 NCIT S 332: 1999
- FC-FLA NCIT S TR-20: 1998
- FC-GS-2 NCIT S 348-2000 Rev 7.01
- FC-FG ANSI X3.289: 1996
- FC-PH ANSI X3.230: 1994
- FC-PH-2 ANSI X3.297: 1997
- FC-PH-3 ANSI X3.303: 1998
- FC-PLDA NCIT S TR-19: 1998
- FC-SW-2 Rev 5.3
- FC-VI Rev 1.61
- FC-MI Rev 1.92
- FC-BB Rev 4.7
- FC-FS Rev 1.7
- FC-BB-2 Rev 5.3
- IPFC RFC 2625
- FCP ANSI X3.269: 1996
- FCP-2 Rev 7

Important Notes

This section provides information you should be aware of when running Fabric OS 3.1.3a.

OS Requirements

HP recommends using the *latest* software release versions to get the greatest benefit from the SAN. Refer to the following web site for information: http://www.hp.com

Mixed Fabric Environment with Different Switch Platforms

Fabric OS v2.6.2, v3.1.2, and v4.2.x introduced a new switch PID format: Extended Edge PID (Format 2). Extended Edge PID is useful if you introduce a Fabric OS 3.1.3a switch into a fabric consisting solely of Fabric OS v2.x/v3.x switches. Before adding a Fabric OS v3.1.3a switch to such a fabric, refer to the *HP StorageWorks Fabric OS Procedures 3.1.x/4.1.x User Guide* for information on the Extended Edge PID format.

Note: Switches must operate with Fabric OS v2.6.2, v3.1.2, v4.2.x or later to use the Extended Edge PID format.

If Extended Edge PID is set (before a downgrade from the current Fabric OS release to an earlier Fabric OS release that does not support the Extended PID format), PID needs to be set back to a supported format, such as Core PID (format 1) or native PID (format 0).

Advanced Web Tool Updates

When using a mixed fabric—that is, a fabric that contains v4.x, v3.x, and v2.x switches—HP recommends that you use the most advanced switches to control the fabric. For example, use the 4.x switches as the primary Fibre Channel Switch (FCS), as the location to perform zoning tasks, and as the time server. HP also recommends that you use the most recently released firmware to control the fabric.

If you use Advanced Web Tools to change the switch name, the HP StorageWorks SAN Director 2/128 Telnet console prompt does not update to the new name until a new Telnet window is opened.

If a dialog box is displayed from the Switch Admin window of Advanced Web Tools and the user selects another dialog box from Advanced Web Tools, a window display error occurs. This is a known issue in Java™ 1.3. HP recommends using Java 1.4.1_03.

Two-Domain and Four-Domain Fabric Licensing

If your fabric includes a switch with a license for a limited number of switches in the fabric and the fabric exceeds the limit, Advanced Web Tools allows a 45-day grace period during which you can still monitor the switch. Advanced Web Tools periodically displays warning messages.

These messages warn you that your fabric size exceeds the supported switch configuration limit and tells you how long you have before Advanced Web Tools will be disabled. After the 45-day grace period, you will no longer be able to launch Advanced Web Tools from the switch if it still exceeds the limit.

Note: Two-domain and four-domain fabric licensing is applicable only to 2 Gb/s switches.

Installing Mozilla 1.4 on Solaris 8 and Solaris 9

For instructions to install Mozilla 1.4 on Solaris 8 and Solaris 9, go to the web site:
http://ftp.mozilla.org/pub/mozilla.org/mozilla/releases/mozilla1.4/mozilla-sparc-sun-solaris2.8_1.4.readme

For a list of operating systems that Mozilla runs on, go to:

http://ftp.mozilla.org/pub/mozilla.org/mozilla/releases/mozilla1.4

For general information on Java for HP-UX, go to:

http://www.hp.com/products1/unix/java/

Mozilla Browser Support for Switch Admin Module

The Mozilla browser does not support the Switch Admin module properly in Fabric OS v2.6.x. In Fabric OS v2.6.2, a warning message is displayed. No warning message is displayed in other v2.6.x versions.

Workaround: Use Netscape 4.7.7 or later.

Browser, OS, and Java Plug-in Support

Advanced Web Tools browser, operating system, and Java Plug-in support is updated for Fabric OS v3.1.3a. (Is Table 1 identifies the supported browsers, operating systems, and Java Plug-ins for this release. Go to the http://www.hp.com web site for the latest list of supported operating systems.

Table 1: Browsers, Operating Systems, and Java Plug-ins

Operating System	Browser	Java Plug-in
HP-UX 11.00	Mozilla 1.4 or later	1.4.2_00 or later (up to but not including 1.5)
HP-UX 11.11 (PA 32-bit & PA 64-bit)	Mozilla 1.4 or later	1.4.2_00 or later (up to but not including 1.5)
HP-UX 11.23 (IA 64-Bit)	Mozilla 1.4 or later	1.4.2_00 or later (up to but not including 1.5)
HP-UX 11.i	+NN7.0	1.4.1_02
HP Tru64 UNIX® 5.1B	Mozilla 1.4	1.4.1_02
HP Tru64 UNIX 5.1A, 5.1b	Mozilla 1.4	1.4.1_02
HP OpenVMS 7.3-1 (64-bit)	Secure Web Browser (SWB 1.4)	1.4.1_02
HP OpenVMS 7.3-2 (64-bit)	Secure Web Browser (SWB 1.4)	1.4.1_02
HP Open VMS 7.3-x (Itanium)	Secure Web Browser (SWB 1.4)	1.4.1_02
AIX 5.1	Mozilla 1.4	1.4.1_01
AIX 5.2	Mozilla 1.4	1.4.1_01
AIX 5.3	Mozilla 1.4	1.4.1_01
Red Hat Linux® 7.3	Mozilla 1.4 or later	1.4.2_02 or later (up to but not including 1.5)

Table 1: Browsers, Operating Systems, and Java Plug-ins (Continued)

Operating System	Browser	Java Plug-in
Red Hat Linux 8.0	Mozilla 1.4 or later	1.4.2_02 or later (up to but not including 1.5)
Red Hat Enterprise Linux AS 2.1 (IA32)	NN7.02	1.4.1_03
Red Hat Enterprise Linux AS 2.1 (IA32 & IA64)	Mozilla 1.4 or later	1.4.2_02 or later (up to but not including 1.5)
Red Hat Enterprise Linux AS 3.0 (IA32 & IA64)	Mozilla 1.4 or later	1.4.2_02 or later (up to but not including 1.5)
Red Flag Linux (32-bit)	Mozilla 1.4 or later	1.4.2_02 or later (up to but not including 1.5)
United Linux 1.0	NN7.02	1.4.1_03
United Linux 1.0 SUSE 8 (IA32)	Mozilla 1.4 or later	1.4.2_02 or later (up to but not including 1.5)
United Linux 1.0 SUSE 8 (IA64)	Mozilla 1.4 or later	1.4.2_02 or later (up to but not including 1.5)
United Linux 2.0	Mozilla 1.4 or later	1.4.2_02 or later (up to but not including 1.5)
Solaris 2.8, 2.9	Mozilla 1.2.1 (recommended) Netscape 7.0 Netscape Communicator 4.78	1.4.2 1.4.1_03
Solaris 7, 8, 9, 10	Mozilla 1.2.1 (recommended) Netscape 7.0 Netscape Communicator 4.78	1.4.2
Windows 2000	IE 6.0 SP1	1.3.1_04 or 1.4.1_02 (recommended)
Windows 2000 SP3	IE 6.0 SP1	1.4.1_03
Windows 2003	IE 6.0 SP1	1.3.1_04 or 1.4.1_02 (recommended)
Windows XP	IE 6.0 SP1	1.4.1_03 (recommended)

Table 1: Browsers, Operating Systems, and Java Plug-ins (Continued)

Operating System	Browser	Java Plug-in
Windows Server 2003 (IA32)	IE 6.0	1.4.1_03
Windows NT 4.0 SP6a	IE 6.0 SP1	1.4.1_03

Additional supported browsers, operating systems, and Java Plug-ins introduce limitations when using mixed OS versions in Advanced Web Tools v3.12.x. These limitations are described in Table 2.

Table 2: Limitations Using Mixed OS Versions

Launch Switch Environment	Issue and Workaround
Firmware: Fabric OS v2.6.x **Operating System:** Solaris **Browser:** Mozilla	The Switch Admin does not launch correctly. **Workaround:** The Netscape browser is not supported by Web Tools. However, if you must access the Switch Admin on a switch running Fabric OS v2.6.x from a Solaris operating system, use the Netscape browser.
Firmware: version *earlier* than Fabric OS v2.6.2, v3.1.2, or v4.2.0 with secure mode enabled **Operating System:** Solaris **Browser:** Mozilla	When accessing the Switch Admin, Zoning, Fabric Watch, or High Availability Admin, the browser might crash. **Workaround**: The Netscape browser is not supported by Web Tools. However, if you must access the Switch Admin, Zoning, Fabric Watch, or High Availability Admin from a Solaris operating system, use the Netscape browser.

Table 2: Limitations Using Mixed OS Versions (Continued)

Launch Switch Environment	Issue and Workaround
Firmware: version *earlier* than Fabric OS v2.6.2, 3.1.2, or 4.2.0 **Operating System:** Any supported operating system (with supported browser) **Browser:** Any supported browser (on supported operating system)	When trying to access a switch running firmware versions Fabric OS v2.6.2, 3.1.2, or 4.2.0 from the launch switch, Switch Explorer will display a null pointer exception, and the SwitchInfo applet will not display; Switch Explorer does not work properly with switches running the latest firmware. **Workaround**: Use a launch switch running Fabric OS v2.6.2, 3.1.2, or 4.2.0 or later to access the switch.
	When trying to perform end-to-end monitoring (Performance Monitor) on a SAN Director 2/128 or SAN Switch 2/8V, the SAN Director 2/128 or SAN Switch 2/8V will be displayed as a 16-port switch. **Workaround:** For the SAN Switch 2/8V, ignore the extra ports. For a SAN Director 2/128, use a launch switch running Fabric OS v4.2.0 or later to perform end-to-end monitoring on the switch.
	When trying to perform zoning on a SAN Director 2/128 or SAN Switch 2/8V, the SAN Director 2/128 or SAN Switch 2/8V will be displayed as a 16-port switch. **Workaround:** If you are running Secure Fabric OS, select a switch running Fabric OS v2.6.2, 3.1.2, or 4.2.0 or later as the primary FCS switch. If you are not running Secure Fabric OS, use a launch switch running Fabric OS v2.6.2, 3.1.2, or 4.2.0 or later to perform zoning on the switch.
Firmware: Fabric OS v 2.6.2, 3.1.2, or 4.2.0 **Operating System:** Any supported operating system (with supported browser) **Browser:** Any supported browser (on supported operating system)	The Name Server table will not display properly for a switch running firmware versions earlier than Fabric OS v2.6.2, 3.1.2, or 4.2.0. **Workaround:** If secure mode is enabled, select a switch running Fabric OS v2.6.2, 3.1.2, 4.2.0 or later as the primary FCS switch. If secure mode is not enabled, use a launch switch running Fabric OS v2.6.2, 3.1.2, 4.2.0 or later to access the Name Server table on the switch.
Firmware: version *earlier* than Fabric OS v2.6.2, 3.1.2, or 4.2.0 **Operating System:** Solaris **Browser:** Netscape	Any switches running Fabric OS v2.6.2, 3.1.2, or 4.2.0 or later are unsupported through Netscape. **Workaround**: Netscape is not a supported browser for switches running Fabric OS v2.6.2, 3.1.2, 4.2.0 or later. Use Mozilla browser to manage all of your switches from a Solaris operating system.

Table 2: Limitations Using Mixed OS Versions (Continued)

Launch Switch Environment	Issue and Workaround
Firmware: version *earlier* than Fabric OS v2.6.1, 3.0.x, or 4.0.x **Operating System:** Windows **Browser:** Internet Explorer	When you are trying to run the Fabric View, the browser might crash. **Workaround**: Use a launch switch that runs Fabric OS versions v2.6.1, 3.0.x, or 4.0.x or later, so that you can use Switch Explorer (not Fabric View).

Fabric Watch Updates

The Fabric Watch default thresholds have been revised so that fewer messages logged.

Table 3: Fabric Watch Default Settings

Class	Class Area name	Description	Default Settings				
			Threshold Setting		Alarm Setting		Threshold State
Port	Link failure count	Monitors number of link failures.	Unit Time Base Low High Buffer	Error(s) Minute 1 60 0	Changed Exceeded **Below** Above In-between	0 0 **0** 1 0	Informative Informative Normal Faulty Informative
	Loss of synchronization count	Monitors number of loss synchronization errors.	Unit Time Base Low High Buffer	Error(s) Minute 1 120 0	Changed Exceeded **Below** Above In-between	0 0 **0** 1 0	Informative Informative Normal Faulty Informative
	Loss of signal count	Monitors number of signal loss errors.	Unit Time Base Low High Buffer	Error(s) Minute 1 120 0	Changed Exceeded **Below** Above In-between	0 0 **0** 1 0	Informative Informative Normal Faulty Informative

Table 3: Fabric Watch Default Settings (Continued)

Class	Class Area name	Description	Default Settings				
			Threshold Setting		Alarm Setting		Threshold State
	Primitive sequence protocol error	Monitors number of primitive sequence errors.	Unit Time Base Low High Buffer	Error(s) Minute 1 60 0	Changed 0 Exceeded Below Above In-between	0 0 **0** 1 0	Informative Informative Normal Faulty Informative
	Invalid transmission word	Monitors number of invalid words transmitted.	Unit Time Base Low High Buffer	Error(s) Minute 1 60 0	Changed Exceeded Below Above In-between	0 0 **0** 1 0	Informative Informative Normal Faulty Informative
	Invalid CRC count	Monitors number of CRC errors.	Unit Time Base Low High Buffer	Error(s) Minute 1 60 0	Changed Exceeded Below Above In-between	0 0 **0** 1 0	Informative Informative Normal Faulty Informative
	Receive performance	Monitors received rate in MB/s.	Unit Time Base Low High Buffer	KB/s 0 0 0	Changed Exceeded Below Above In-between	0 0 0 0 0	Informative Informative Informative Informative Informative
	State changes	Monitors state changes	Unit Time Base Low High Buffer	Error(s) Minute 1 120 0	Changed Exceeded Below Above In-between	0 0 0 1 0	Informative Informative Normal Faulty Informative

Table 3: Fabric Watch Default Settings (Continued)

Class	Class Area name	Description	Default Settings					
			Threshold Setting		Alarm Setting		Threshold State
E_Port	Link failure count	Monitors number of link failures	Unit Time Base Low **High** Buffer	Error(s) Minute 1 **5** 0	Changed Exceeded **Below** Above In-between	0 0 **0** 1 0	Informative Informative Normal Faulty Informative
	Loss of synchronization count	Monitors number of loss synchronization errors.	Unit Time Base Low **High** Buffer	Error(s) Minute 1 5 0	Changed Exceeded Below Above In-between	0 0 0 1 0	Informative Informative Normal Faulty Informative
	Loss of signal count	Monitors number of signal loss errors	Unit Time Base Low **High** Buffer	Error(s) Minute 1 **5** 0	Changed Exceeded **Below** Above In-between	0 0 **0** 1 0	Informative Informative Normal Faulty Informative
	Primitive sequence protocol error	Monitors number of primitive sequence errors	Unit Time Base Low **High** Buffer	Error(s) Minute 1 **5** 0	Changed Exceeded **Below** Above In-between	0 0 **0** 1 0	Informative Informative Normal Faulty Informative
	Invalid transmission word	Monitors number of invalid words transmitted	Unit Time Base Low **High** Buffer	Error(s) Minute 1 **5** 0	Changed Exceeded **Below** Above In-between	0 0 **0** 1 0	Informative Informative Normal Faulty Informative
	Invalid CRC count	Monitors number of CRC errors	Unit Time Base Low **High** Buffer	Error(s) Minute 1 **5** 0	Changed Exceeded **Below** Above In-between	0 0 **0** 1 0	Informative Informative Normal Faulty Informative

Table 3: Fabric Watch Default Settings (Continued)

Class	Class Area name	Description	Default Settings				
			Threshold Setting		Alarm Setting		Threshold State
	Receive performance	Monitors received rate in KB/s	Unit Time Base Low **High** Buffer	KB/s 120000 **220000** 0	Changed Exceeded Below Above In-between	0 0 0 0 0	Informative Informative Normal Faulty Informative
	Transmit performance	Monitors transmit rate in KB/s	Unit Time Base Low **High** Buffer	KB/s 120000 **220000** 0	Changed Exceeded Below Above In-between	0 0 0 0 0	Informative Informative Normal Faulty Informative
	State changes	Monitors state changes	Unit Time Base Low **High** Buffer	Error(s) Minute 1 **2** 0	Changed Exceeded **Below** Above In-between	0 0 **1** 1 0	Informative Informative Normal Faulty Informative
Fabric Copper Port	Link failure count	Monitors number of link failures	Unit Time Base Low **High** Buffer	Error(s) Minute 1 **5** 0	Changed Exceeded **Below** Above In-between	0 0 **1** 1 0	Informative Informative Normal Faulty Informative
	Loss of synchronization count	Monitors number of loss synchronization errors.	Unit Time Base Low **High** Buffer	Error(s) Minute 1 **8** 0	Changed Exceeded **Below** Above In-between	0 0 **1** 1 0	Informative Informative Normal Faulty Informative

Table 3: Fabric Watch Default Settings (Continued)

Class	Class Area name	Description	Default Settings					
			Threshold Setting		Alarm Setting		Threshold State
	Loss of signal count	Monitors number of signal loss errors	Unit Time Base Low **High** Buffer	Error(s) Minute 1 **8** 0	Changed Exceeded **Below** Above In-between	0 0 **1** 1 0	Informative Informative Normal Faulty Informative
	Primitive sequence protocol error	Monitors number of primitive sequence errors	Unit Time Base Low **High** Buffer	Error(s) Minute 1 **5** 0	Changed Exceeded **Below** Above In-between	0 0 **0** 1 0	Informative Informative Normal Faulty Informative
	Invalid transmission word	Monitors number of invalid words transmitted	Unit Time Base Low **High** Buffer	Error(s) Minute 1 **5** 0	Changed Exceeded **Below** Above In-between	0 0 **0** 1 0	Informative Informative Normal Faulty Informative
	Invalid CRC count	Monitors number of CRC errors	Unit Time Base Low **High** Buffer	Error(s) Minute 1 **5** 0	Changed Exceeded **Below** Above In-between	0 0 **0** 1 0	Informative Informative Normal Faulty Informative
	State changes	Monitors state changes	Unit Time Base Low **High** Buffer	Error(s) Minute 1 **15** 0	Changed Exceeded **Below** Above In-between	0 0 **0** 1 0	Informative Informative Normal Faulty Informative

Table 3: Fabric Watch Default Settings (Continued)

Class	Class Area name	Description	Default Settings					
			Threshold Setting		Alarm Setting		Threshold State
Fabric Optic Port	Link failure count	Monitors number of link failures	Unit Time Base Low **High** Buffer	Error(s) Minute 1 **5** 0	Changed Exceeded **Below** Above In-between	0 0 **0** 1 0	Informative Informative Normal Faulty Informative
	Loss of synchroni-zation count	Monitors number of loss synchroni-zation errors.	Unit Time Base Low **High** Buffer	Error(s) Minute 1 **5** 0	Changed Exceeded **Below** Above In-between	0 0 **0** 1 0	Informative Informative Normal Faulty Informative
	Loss of signal count	Monitors number of signal loss errors	Unit Time Base Low **High** Buffer	Error(s) Minute 1 **5** 0	Changed Exceeded **Below** Above In-between	0 0 **0** 1 0	Informative Informative Normal Faulty Informative
	Primitive sequence protocol error	Monitors number of primitive sequence errors	Unit Time Base Low **High** Buffer	Error(s) Minute 1 **0** 0	Changed Exceeded **Below** Above In-between	0 0 **0** 1 0	Informative Informative Normal Faulty Informative
	Invalid transmission word	Monitors number of invalid words transmitted	Unit Time Base Low **High** Buffer	Error(s) Minute 1 **5** 0	Changed Exceeded **Below** Above In-between	0 0 **0** 1 0	Informative Informative Normal Faulty Informative

Table 3: Fabric Watch Default Settings (Continued)

Class	Class Area name	Description	Default Settings				
			Threshold Setting		Alarm Setting		Threshold State
	Invalid CRC count	Monitors number of CRC errors	Unit Time Base Low **High** Buffer	Error(s) Minute 1 **5** 0	Changed Exceeded **Below** Above In-between	0 0 **1** 1 0	Informative Informative Normal Faulty Informative
	State changes	Monitors state changes	Unit Time Base Low **High** Buffer	Error(s) Minute 1 **15** 0	Changed Exceeded **Below** Above In-between	0 0 **1** 1 0	Informative Informative Normal Faulty Informative

Other Notes

Table 4 list important information for Fabric OS v3.1.3a.

Table 4: Fabric OS Area Information

Fabric OS Area	Description
Fabric configuration	During fabric configuration, the countdown message that used to appear on the console is removed starting with Fabric OS v2.6.2, v3.1.2, and v4.2.x. The fabric reconfiguration message is now captured in the error log. For details, refer to the diagnostic messages in the *HP StorageWorks Diagnostic and System Error Messages 3.1.x/4.1.x Reference Guide*.
Fabric Watch: e-mail alert error message	If an event occurs while Fabric Watch e-mail alerts are being enabled, the message `ErrLog: Error Level=3 [(null)]` is captured to the system error log. This message is from SMTP and can be ignored.
FARP requests	Fabric OS v2.x and v3.x do not support FARP requests, only ARP requests. When using IP over Fibre Channel, confirm that all host HBAs support ARP requests and issue ARP requests.

Table 4: Fabric OS Area Information (Continued)

Fabric OS Area	Description
License removal	When a user removes a license from the switch, the feature is not disabled until the switch is rebooted or a switch disable or enable is performed.
Security: PKICERT utility, CSR syntax	Before using the PKICERT utility to prepare a certificate signing request (CSR), ensure that there are no spaces in the switch names of any switches in the fabric. The web site that processes the CSRs and generates the digital certificates does not accept switch names containing spaces; CSRs that do not conform to this requirement are rejected.
Zoning: license	To use zoning in a non-RCS (reliable commit service) mode fabric (that is, in a fabric containing switches with firmware versions other than v2.6.x, v3.1, and v4.1), HP recommends that all appropriate zoning licenses be installed on all the switches in the fabric before attempting to bring a switch in to the fabric. If the zoning license is to be removed, the user must make sure it is reinstalled properly on the affected switch before attempting the `cfgenable` zoning operation. Failure to follow these steps can cause inconsistency of zoning configuration on the affected switches, if a zoning operation is attempted from a remote switch in the fabric. On the affected switches, an error message appears on the console or Telnet session (or by issuing the `errShow` or `errDump` command), indicating that the zoning license is missing.

CLI Command Updates and Changes

The commands described in this section have been added or modified since the Fabric OS v3.1.x release in June, 2003.

New Command Introduced in v3.1.2

The `pathInfo` command was added in Fabric OS v3.1.2

pathInfo

Displays routing and statistics information along a path.

Synopsis

`pathInfo [[[`*`domain`*`], `*`source port`*`], `*`destination port`*`] [,"-r"]`

Availability

all users

Description

The `pathInfo` command displays detailed routing information from a source port (or area) on the local switch to a destination port (or area) on another switch. This routing information describes the exact path that a user data stream takes to go from the source to the destination. If the user specifies the use of inactive ports or a path through a switch that does not have active routing tables to the destination, `pathInfo` will describe the path that would be used if the ports were active. If the user specifies a destination port that is not active, then `pathInfo` will use the embedded port as the destination.

For switches with blades, the ingress and egress points are specified as area numbers. For a non-bladed switch, ingress and egress points are specified as ports. This agrees with the representation shown in the `switchShow` command.

In addition, `pathInfo` can provide, upon request, statistics on every traversed ISL.

The routing and statistics information is provided by every switch along the path, based on the current routing tables information and statistics calculated continuously in real time. Each switch represents one hop.

Other options allow the collection of information on the reverse path or on a user-selected path (source route).

For each hop, the routing information output includes the following:

Hop	The hop number, the local switch being hop 0.
In Port	The port (or area) from which the frames come. For hop 0, the source port. For a switch with blades, this is specified as the area number; otherwise, as the port number.
Domain ID	The domain ID of the switch.
Name	The name of the switch.
Out Port	The output port that the frames take to reach the next hop. For the last hop, the destination port or area. For a switch with blades, this is specified as the area number; otherwise, as the port number.
BW	The bandwidth of the output ISL, in gigabits per second. It does not apply to the embedded port.
Cost	The cost of the link used by FSPF routing protocol. It only applies to an E_Port.

For each hop, statistics are broken down into *basic* and *extended*. They are reported below the routing information, separated into *input port statistics* and *output port statistics*. For each port, they are further separated into *transmit* and *receive* statistics. Statistics are not reported for the embedded port.

Some values are measured over multiple time intervals. For example, the output line utilization in bytes per second is calculated over both a 1-second period and over a 64-second period. This gives an idea of both the current line utilization and the utilization over a longer period of time. The time interval is reported in parentheses, after the value's description.

Maximum hop count

The `pathInfo` command uses a special frame that is sent hop by hop from the source switch to the destination switch, collecting routing and statistics information at every hop. To prevent such a frame from looping forever if an error occurs, a maximum number of hops for the frame to traverse is enforced.

The hop count includes all hops in the direct path from source to destination, and also all the hops in the reverse path, if reverse-path tracing is requested. The default value for the maximum hop count is 25.

Basic statistics

Basic statistics report variables that give an indication of ISL congestion along the path. They include the following:

B/s	Bytes per second.
Txcrdz	The length of time, in milliseconds, that the port has been prevented from transmitting frames due to lack of buffer-to-buffer credit. This is an indication of downstream congestion. Note that other commands—for example, `portStatsShow`—might express this value in units other than milliseconds.

Extended statistics

Extended statistics report variables of general interest. They include the following:

F/s	Frames per second.
Words	Total number of 4-byte Fibre Channel words.
Frames	Total number of frames.
Errors	Total number of errors that might cause a frame to be received incorrectly. This includes CRC errors, bad-EOF errors, frame-truncated errors, frame-too-short errors, and encoding errors inside a frame.

Reverse path

In general, the path from port A on switch X to port B on switch Y might be different from the path from port B to port A. The difference could be in the links traversed between the same sequence of switches, or the reverse path might even involve different switches. The trace reverse path option allows the user to determine both routing and statistics information for the reverse path, in addition to those for the direct path.

Source route

The source route option allows the user to specify a sequence of switches or ports (or areas) that the `pathInfo` frame has to follow to reach the destination. Therefore, the path might be different from the one the actual traffic from source to destination will take.

The source route is expressed as a sequence of switches, a sequence of output ports (or areas), or a combination thereof. The next hop in the source route is described by either the output port (or area) to be used to reach the hop or the domain ID of the next hop.

The source route can specify a partial route from source to destination (in which case the remaining hops are chosen as the path from the input port (or area) on the first hop not listed in the source route to the destination), as a full route, or as an arbitrary route across the fabric. The maximum hop count is enforced.

If the source route does not specify all the switches along a section of the path, a further option allows you to specify a *strict path* versus a *loose path*. A strict source route requires that only the specified switches are reported in the path description. If two switches are specified back to back in the source route descriptor but are not directly connected, the switches in between will be ignored. In the case of a loose source route, the switches in between will be reported. The concepts of strict and loose route apply to the portion(s) of the path described by domains, not to the part described by output ports/areas.

Operands

The following operands are allowed:

`domain`	The ID of the destination domain.
`source port`	The port (or area) whose path to the destination domain is sought. The embedded port (-1) is used by default. For a switch with blades, the destination is specified as the area; otherwise, as the port. If the source port is given as -1 with no additional arguments, then basic statistics will be displayed for the route.

`destination port`	A port on the destination switch. pathInfo will return the state of the port (or area). The embedded port (-1) is used by default or if the user specifies a destination port that is not active. For a switch with blades, the destination is specified as the area; otherwise, as the port.
`-r`	Command output shows the reverse path in addition to the forward path.

Without operands, `pathInfo` will bring up a menu in which the following parameters can be provided:

max hops	The maximum number of hops that the `pathInfo` frame is allowed to traverse. Default: 25.
domain	The ID of the destination domain. Mandatory; no default.
source port	The port whose path to the destination domain is sought. It can be an F_Port or an E_Port. The embedded port (-1) is used by default. For a switch with blades, this is specified as the area; otherwise, as the port.
destination port	A port on the destination switch. `pathInfo` will return the state of the port and all requested statistics pertaining to the port. The embedded port (-1) is used by default or if the specified destination port is not an existing active port. For a switch with blades, this is specified as the area; otherwise, as the port.
basic stats	Requests the reporting of basic statistics on every link. Default: no.
extended stats	Requests the reporting of extended statistics on every link. Default: no.
trace reverse path	Provides path information from the destination port to the source port. Default: no.

source route	Specifies a sequence of switches or ports that the `pathInfo` frame should traverse. Note that if an output port (or area) to the next hop is specified, then the user will not be prompted for the domain of the next switch; that is determined by the port (or area) specified. Default: no.
strict source rte	Specifies that the source route must be followed strictly as indicated, skipping possible intermediate switches. When using this option, the source route must be specified using domain numbers (rather than the output port).
Timeout	The maximum time allowed to wait for the response. Default: 10 seconds.

Examples

The following example shows the `pathInfo` command invoked with all operands on the command line:

```
web226:root> pathInfo 91
Target port is Embedded
   Hop In Port  Domain ID (Name)      Out Port    BW   Cost
     ------------------------------------------------------------
      0       E         9 (web226)           2       1G   1000
      1       3        10 (web229)           8       1G   1000
      2       8         8 (web228)           9       1G   1000
      3       6        91 (web225)           E       -      -
```

The following example shows the `pathInfo` command invoked with all operands on the command line:

```
web226:root> pathInfo
Max hops: (1..127) [25]
         Domain: (1..239) [-1] 8
         Source port: (0..15) [-1]
         Destination port: (0..255) [-1]
         Basic stats (yes, y, no, n): [no] y
         Extended stats (yes, y, no, n): [no] y
         Trace reverse path (yes, y, no, n): [no]
         Source route (yes, y, no, n): [no]
         Timeout: (1..30) [5]
```

(Example continues on next two pages.)

```
Target port is Embedded
   Hop  In Port  Domain ID (Name)      Out Port    BW   Cost
   ------------------------------------------------------------
   0       E         9 (web226)           2       1G   1000
   Port                              E                      2
                            Tx        Rx        Tx        Rx
                            ------------------------------------
   B/s (1s)                 -         -         0         0
   B/s (64s)                -         -         1         1
   Txcrdz (1s)              -         -         0         -
   Txcrdz (64s)             -         -         0         -
   F/s (1s                  -         -         0         0
   F/s (64s)                -         -      2743         0
   Words                    -         -   2752748   2822763
   Frames                   -         -    219849     50881
   Errors                   -         -         -         0
Target port is Embedded
   Hop  In Port  Domain ID (Name)      Out Port    BW   Cost
   ------------------------------------------------------------
   1       3        10 (web229)          12       1G   1000
   Port                              3                     12
                            Tx        Rx        Tx        Rx
                            ------------------------------------
   B/s (1s)                 36        76        0         0
   B/s (64s)                5         5         5         5
   Txcrdz (1s)              0         -         0         -
   Txcrdz (64s)             0         -         0         -
   F/s (1s                  1         1         0         0
   F/s (64s)                0         0         0         0
   Words            240434036   2294316   2119951   2121767
   Frames            20025929     54999     162338     56710
   Errors                   -         4         -         0
```

```
Hop   In Port   Domain ID (Name)       Out Port     BW    Cost
2       14           8 (web229)         E          1     -
Port                                14                    E
                          Tx          Rx          Tx          Rx
                          ------------------------------------
B/s (1s)                  0           76          0           0
B/s (64s)                 5           5           5           5
Txcrdz (1s)               0           -           0           -
Txcrdz (64s)              0           -           0           -
F/s (1s                   0           1           0           0
F/s (64s)                 0           0           0           0
Words               20158695    1021842           -           -
Frames               1665662      56849           -           -
Errors                    -           4           -           -
```

See Also

portStatsShow

switchShow

Commands Modified in v3.1.3

The following commands were modified in Fabric OS v3.1.3:

- `quietMode`
- `switchShow`
- `configure`

quietMode

Sets or clears the telnet session quiet mode, or displays the current mode.

Synopsis

`quietMode [`*`newMode`*`]`

Availability

all users (display)

admin (set/clear)

Description

This command affects the output displayed on the switch's console (serial port or telnet session).

By default, quiet mode is turned off, and all switch tasks can send output to the console. Some output is caused by asynchronous events, such as the fabric reconfiguring, or by devices logging in.

When quiet mode is turned on, only output produced by shell commands is shown; all asynchronous output produced by other tasks is suppressed. This is useful when driving a telnet session via a script that might not expect any asynchronous output.

Operands

The following operand is optional:

newMode	0	Clears quiet mode (all tasks can print to the console).
	1	Sets quiet mode (only shell commands can print).

Example

The following example first displays the current mode and then turns quite mode on:

```
sw5:admin> quietMode
Quiet Mode is OFF
sw5:admin> quietMode 1
Committing configuration...done.
Quiet Mode is now ON
```

switchShow

The `switchShow` command now supports the *`-portcount`* option, which returns the number of ports on the switch. The syntax is:

Synopsis

`switchShow, "-portcount`

configure

The Domain, R_A_TOV, and E_D_TOV fields have changed, as follows:

Fields	Default	Range
Domain	1	varies
R_A_TOV	10000	E_D_TOV * 2 to 12000
E_D_TOV	2000	1000 to R_A_TOV / 2

Commands Modified Since v3.1.x

The following commands have been modified since the Fabric OS v3.1.x release:

- `fabRetryShow`
- `portCfgGport`
- `portCfgLongDistance`
- `portCfglslMode`
- `zoneCreate`

fabRetryShow

Additional descriptions for two lines of command output have been added:

“EMT	Fabric Controller Mark Timestamp.
ETP	Exchange Trunking Parameter.

portCfgGport

On the SAN Switch 2/8-EL, a fabric license is required for the `portcfggport` command to function properly; otherwise, a “fabric support required” message displays.

portCfgLongDistance

`portCfgislMode` and `portCfgLongDistance` cannot both be enabled at the same time; otherwise, fabric segmentation occurs.

portcfglismode

The `portCfgislMode` and `portCfgLongDistance` commands cannot both be enabled at the same time; otherwise, fabric segmentation occurs.

zonecreate

The `zonename` operand has changed, as follows:

`zonename`	Name for a zone to be created, in quotation marks. This name cannot be used for any other zone objects. Zone names are limited to 64 characters.

New Diagnostic and System Error Messages

This section describes new system error messages.

DIAG-BADINT

Message

```
Critical DIAG-BADINT, 1
```

Probable Cause

The ASIC central memory SRAMs did not complete the BISR within the timeout period. This usually indicates DIAG-BADINT.

Severity

Critical

DIAG-BUS_TIMEOUT

Message

```
Critical DIAG-BUS_TIMEOUT, 1
```

Probable Cause

ASIC internal logic failed. This usually indicates an ASIC failure. This message is generated by the filtertest command, if problems are found.

Recommended Action

Replace the motherboard FRU for the SAN Switch 2/16.

Replace the entire switch or the SAN Switch 2/8.

Severity

Critical

DIAG-CAMFLTR

Message

```
Critical DIAG-CAMFLTR, 1
```

Probable Cause

Port received an unexpected interrupt. This usually indicates an ASIC failure. This message is generated by the `centralmemorytest` or the `cmitest` command, if problems are found.

Recommended Action

Replace the motherboard FRU for the SAN Switch 2/16.

Replace the entire switch or the SAN Switch 2/8.

Severity

Critical

DIAG-CAMINIT

Message

```
Critical DIAG-CAMINIT, 1
```

Probable Cause

Port failed to initialize due to one of the following reasons:

- Switch not disabled
- Diagnostic queue absent
- Malloc failed
- Chip is not present
- Port is not in loopback mode
- Port is not active
- Software operational setup error or motherboard failure

This can be caused by a faulty cable or deteriorated SFP. It can also indicate deeper problems in the motherboard or ASIC. This message is generated by the `camtest` command.

Recommended Action

Check for a faulty cable or deteriorated SFP. Replace the cable or SFP if necessary.

If the problem persists:

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-CAMSID

Message

```
Critical DIAG-CAMSID, 1
```

Probable Cause

ASIC failed SID NO translation test. This usually indicates an ASIC failure. This message is generated by the `camtest` command.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-CAMSTAT

Message

```
Critical DIAG-CAMSTAT, 1
```

Probable Cause

The ASIC improperly counted the number of frames with CRC errors. This usually indicates an ASIC failure. This message is generated by the `statisticstest` command, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-CLEAR_ERR

Message

```
Warning DIAG-CLEAR_ERR, 3
```

Probable Cause

The port diag error flag (OK or BAD) is cleared.

Recommended Action

This message is for information only; no action is required.

Severity

Warning

DIAG-CMBISRF

Message

```
Critical DIAG-CMBISRF, 1
```

Probable Cause

ASIC central memory SRAMs did not complete the BISR within the timeout period. This usually indicates an ASIC failure. This message is generated by the `centralmemorytest` command, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-CMBISRTO

Message

```
Critical DIAG-CMBISRTO, 1
```

The ASIC central memory SRAMs did not complete the BISR within the timeout period. This usually indicates an ASIC failure. This message is generated by the `centralmemorytest` command.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-CMERRPTN

Message

```
Critical DIAG-CMERRPTN, 1
```

Probable Cause

Error detected at the wrong port. This usually indicates an ASIC failure. This message is generated by the `centralmemorytest` command, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-CMERRTYPE

Message

```
Critical DIAG-CMERRTYPE, 1
```

Probable Cause

A port received the wrong CMEM error type. This usually indicates an ASIC failure. This message is generated by the `centralmemorytest` command, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-CMICKSUM

Message

```
Critical DIAG-CMICKSUM, 1
```

Probable Cause

CMI message received failed. This usually indicates an ASIC or motherboard failure. This message is generated by the `cmitest` command, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-CMIDATA

Message

```
Critical DIAG-CMIDATA, 1
```

Probable Cause

CMI data received did not match data transmitted. This usually indicates an ASIC or motherboard failure. This message is generated by the `cmitest` command, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-CMIINVCAP

Message

```
Critical DIAG-CMIINVCAP, 1
```

Probable Cause

Unintended ASIC erroneously received a CMI capture flag. This usually indicates an ASIC or motherboard failure. This message is generated by the `cmitest` command, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-CMINOCAP

Message

```
Critical DIAG-CMINOCAP, 1
```

Probable Cause

CMI intended receiver ASIC failed to get CMI capture flag. This usually indicates an ASIC or motherboard failure. This message is generated by the `cmitest` command, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-CMISA1

Message

```
Critical DIAG-CMISA1, 1
```

Probable Cause

An attempt to send a CMI message from ASIC to ASIC failed. This usually indicates an ASIC failure. This message is generated by the `cmitest` command, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-CMNOBU

Message

```
Critical DIAG-CMNOBUF, 1
```

Probable Cause

Port could not get any buffers. This usually indicates an ASIC failure. This message is generated by the `centralmemorytest` command, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-DATA

Message

```
Critical DIAG-DATA, 1
```

Probable Cause

Payload received by port did not match payload transmitted. This can be caused by a faulty cable or deteriorated SFP. It can also indicate deeper problems in the motherboard or ASIC. This message is generated by the `crossporttest` or `portloopbacktest` commands, if problems are found.

Recommended Action

Check for a faulty cable or deteriorated SFP. Replace the cable or SFP.

If the problem persists:

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-ERRSTAT (2LONG)

Message

```
Critical DIAG-ERRSTAT (2LONG), 1
```

Probable Cause

The Port Error Statistics counter is nonzero, meaning that a “Frame too long” error was detected when receiving frames. This can be caused by a faulty cable or deteriorated SFP. It can also indicate deeper problems in the motherboard or ASIC. This message is generated by the `portloopbacktest` or `spinsilk` commands, if problems are found.

Recommended Action

Check for a faulty cable or deteriorated SFP. Replace the cable or SFP if necessary.

If the problem persists:

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-ERRSTAT (BADEOF)

Message

```
Critical DIAG-ERRSTAT (BADEOF), 1
```

Probable Cause

The Port Error Statistics counter is nonzero, meaning that a “Bad end of file” error was detected when receiving frames. This can be caused by a faulty cable or deteriorated SFP. It can also indicate deeper problems in the motherboard or ASIC. This message is generated by the `portloopbacktest` or `spinsilk` commands, if problems are found.

Recommended Action

Check for a faulty cable or deteriorated SFP. Replace the cable or SFP if necessary.

If the problem persists:

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-ERRSTAT (BADORD)

Message

```
Critical DIAG-ERRSTAT (BADORD), 1
```

Probable Cause

The Port Error Statistics counter is nonzero, meaning that a “Bad symbol on fiber-optic cable” error was detected when receiving frames. This can be caused by a faulty cable or deteriorated SFP. It can also indicate deeper problems in the motherboard or ASIC. This message is generated by the `portloopbacktest` or `spinsilk` commands, if problems are found.

Recommended Action

Check for a faulty cable or deteriorated SFP. Replace the cable or SFP if necessary.

If the problem persists:

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-ERRSTAT (CRC)

Message

```
Critical DIAG-ERRSTAT (CRC), 1
```

Probable Cause

The Port Error Statistics counter is nonzero, meaning that a “Cyclic redundancy check on frame failed” error was detected when receiving frames. This can be caused by a faulty cable or deteriorated SFP. It can also indicate deeper problems in the motherboard or ASIC. This message is generated by the `portloopbacktest` or `spinsilk` commands, if problems are found.

Recommended Action

Check for a faulty cable or deteriorated SFP. Replace the cable or SFP if necessary.

If the problem persists:

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-ERRSTAT(CRL)

Message

```
Critical DIAG-ERRSTAT(CRL), 1
```

Probable Cause

The Port Error Statistics counter is nonzero, meaning that a “Cyclic redundancy check on frame failed” error was detected when receiving frames. This can be caused by a faulty cable or deteriorated SFP. It can also indicate deeper problems in the motherboard or ASIC. This message is generated by the `portloopbacktest` commands, if problems are found.

Recommended Action

Check for a faulty cable or deteriorated SFP. Replace the cable or SFP if necessary.

If the problem persists:

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-ERRSTAT (DISCC3)

Message

```
Critical DIAG-ERRSTAT (DISCC3), 1
```

Probable Cause

The Port Error Statistics counter is nonzero, meaning that a “Discarded Class 3 frames” error was detected when receiving frames. This can be caused by a faulty cable or deteriorated SFP. It can also indicate deeper problems in the motherboard or ASIC. This message is generated by the `portloopbacktest` or `spinsilk` commands, if problems are found.

Recommended Action

Check for a faulty cable or deteriorated SFP. Replace the cable or SFP if necessary.

If the problem persists:

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-ERRSTAT (ENCIN)

Message

```
Critical DIAG-ERRSTAT (ENCIN), 1
```

Probable Cause

The Port Error Statistics counter is nonzero, meaning that an “Encoding error, inside frame” error was detected when receiving frames. This can be caused by a faulty cable or deteriorated SFP. It can also indicate deeper problems in the motherboard or ASIC. This message is generated by the `portloopbacktest` or `spinsilk` commands, if problems are found.

Recommended Action

Check for a faulty cable or deteriorated SFP. Replace the cable or SFP if necessary.

If the problem persists:

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-ERRSTAT (ENCOUT)

Message

```
Critical DIAG-ERRSTAT (ENCOUT), 1
```

Probable Cause

The Port Error Statistics counter is nonzero, meaning that an “Encoding error, outside frame” error was detected when receiving frames. This can be caused by a faulty cable or deteriorated SFP. It can also indicate deeper problems in the motherboard or ASIC. This message is generated by the `portloopbacktest` or spinsilk commands, if problems are found.

Recommended Action

Check for a faulty cable or deteriorated SFP. Replace the cable or SFP if necessary.

If the problem persists:

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-ERRSTAT (TRUNC)

Message

```
Critical DIAG-ERRSTAT (TRUNC), 1
```

Probable Cause

The Port Error Statistics counter is nonzero, meaning that a “Truncated frame” error was detected when receiving frames. This can be caused by a faulty cable or deteriorated SFP. It can also indicate deeper problems in the motherboard or ASIC. This message is generated by the `portloopbacktest` or `spinsilk` commands, if problems are found.

Recommended Action

Check for a faulty cable or deteriorated SFP. Replace the cable or SFP if necessary.

If the problem persists:

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-INIT

Message

```
Critical DIAG-INIT, 1
```

Probable Cause

Port failed to go active in the loopback mode requested. This can be caused by a faulty cable or deteriorated SFP. It can also indicate deeper problems in the motherboard or ASIC. This message is generated by the `crossporttest`, `portloopbacktest`, or `spinsilk` commands, if problems are found.

Recommended Action

Check for a faulty cable or deteriorated SFP. Replace the cable or SFP if necessary.

If the problem persists:

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-INTNIL

Message

```
Critical DIAG-INTNIL, 1
```

Probable Cause

ASIC failed to get a CMI error (interrupt). This usually indicates an ASIC failure. This message is generated by the `cmitest` command, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-INTNOTCLR

Message

```
Critical DIAG-INTNOTCLR, 1
```

Probable Cause

The interrupt bit could not be cleared. This usually indicates an ASIC failure. This message is generated by the `centralmemorytest` command, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-LCMEM

Message

```
Critical DIAG-LCMEM, 1
```

Probable Cause

Data read from the central memory location did not match data previously written into the same location. This usually indicates an ASIC failure. This message is generated by the `centralmemorytest` and `cmemretentiontest` commands, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-LCMEMTX

Message

```
Critical DIAG-LCMEMTX, 1
```

Probable Cause

Central memory transmit path failure: ASIC 1 failed to read ASIC 2 using the transmit path. This usually indicates a motherboard failure. This message is generated by the `centralmemorytest` command, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-LCMRS

Message

```
Critical DIAG-LCMRS, 1
```

Probable Cause

Central memory read short: number of bytes requested not received. This usually indicates an ASIC problem. This message is generated by the `centralmemorytest` and the `cmemretentiontest` commands, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-LCMTO

Message

```
Critical DIAG-LCMTO, 1
```

Probable Cause

Central memory timeout: data transfer initiated did not complete within the timeout period. This usually indicates an ASIC failure. This message is generated by the `centralmemorytest` and the `cmemretentiontest` commands, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-MEMNULL

Message

```
Critical DIAG-MEMNULL, 1
```

Probable Cause

The ASIC failed to allocate memory. This usually indicates a motherboard failure. This message is generated by the `ramtest` command, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-MEMORY

Message

```
Critical DIAG-MEMORY, 1
```

Probable Cause

Data read from RAM location did not match previously written data into the same location. This usually indicates a CPU RAM failure. This message is generated by the **ramtest** command, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-MEMSZ

Message

```
Critical DIAG-MEMSZ, 1
```

Probable Cause

Memory size to be tested is less than or equal to zero. This usually indicates a motherboard failure. This message is generated by the `ramtest` command, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-NOSEGMENT

Message

```
Critical DIAG-NOSEGMENT, 1
```

Probable Cause

Port failed to go into loopback mode. This message usually indicates improper cable connections. This message is generated by the `spinsilk` command, if problems are found.

Recommended Action

Verify cable connections. Reseat the SFPs and cables and then reexecute the test.

Check for a faulty cable or deteriorated SFP. Replace the cable or SFP if necessary.

Severity

Critical

DIAG-PORTABSENT

Message

```
Critical DIAG-PORTABSENT, 1
```

Probable Cause

Port is not present. This can be caused by a faulty cable or deteriorated SFP. It can also indicate deeper problems in the motherboard or ASIC. This message is generated by the `portloopbacktest` or `spinsilk` commands.

Recommended Action

Check for a faulty cable or deteriorated SFP. Replace the cable or SFP.

If the problem persists:

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-PORTDIED

Message

```
Critical DIAG-PORTDIED, 1
```

Probable Cause

Port was in loopback mode and then went inactive. This can be caused by a faulty cable or deteriorated SFP. It can also indicate deeper problems in the motherboard or ASIC. This message is generated by the `crossporttest`, `portloopbacktest`, or `spinsilk` commands, if problems are found.

Recommended Action

Check for a faulty cable or deteriorated SFP. Replace the cable or SFP if necessary.

If the problem persists:

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-PORTM2M

Message

```
Critical DIAG-PORTM2M, 1
```

Probable Cause

Port is connected to itself (self-loopback). This port M-to-port-M connection is not allowed by the test. This message usually indicates improper cable connections. This message is generated by the `spinsilk` command, if problems are found.

Recommended Action

Reconnect port (M) to a different port (N) and reexecute the test.

Severity

Critical

DIAG-PORTSTOPPED

Message

```
Critical DIAG-PORTSTOPPED, 1
```

Probable Cause

Port is no longer transmitting, as indicated by the Number Of Frames Transmitted counter being stuck at N frames. This can be caused by a faulty cable or deteriorated SFP. It can also indicate deeper problems in the motherboard or ASIC. This message is generated by the `spinsilk` command, if problems are found.

Recommended Action

Check for a faulty cable or deteriorated SFP. Replace the cable or SFP if necessary.

If the problem persists:

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-PORTWRONG

Message

```
Critical DIAG-PORTWRONG, 1
```

Probable Cause

Frame erroneously received by port M instead of the intended port N. This usually indicates an ASIC failure. This message is generated by the `portloopbacktest` command, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-POST_SKIPPED

Message

```
Warning DIAG-POST_SKIPPED, 4
```

Probable Cause

POST was not executed on the last boot up.

Recommended Action

This message is for information purposes only; no action is required.

Severity

Warning

DIAG-REGERR

```
Critical DIAG-REGERR, 1
```

Probable Cause

Data read from an ASIC register or ASIC SRAM did not match data previously written into the same location. This usually indicates an ASIC failure. This message is generated by the `portregtest` or the `sramretentiontest` commands, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-REGERR_UNRST

Message

```
Critical DIAG-REGERR_UNRST, 1
```

Probable Cause

Port failed to unreset. This usually indicates an ASIC failure. This message is generated by the `portregtest` or the `sramretentiontest` commands, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-STATS (C3FRX)

Message

```
Critical DIAG-STATS (C3FRX), 1
```

Probable Cause

Port counter value did not match the number of frames actually transmitted. In this case, C3FRX = number of Class 3 frames received. This can be caused by a faulty cable or deteriorated SFP. It can also indicate deeper problems in the motherboard or ASIC. This message is generated by the `portloopbacktest` command, if problems are found.

Recommended Action

Check for a faulty cable or deteriorated SFP. Replace the cable or SFP if necessary.

If the problem persists:

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-STATS (FRX)

Message

```
Critical DIAG-STATS (FRX), 1
```

Probable Cause

Port counter value did not match the number of frames actually transmitted. In this case, FRX = number of frames received. This can be caused by a faulty cable or deteriorated SFP. It can also indicate deeper problems in the motherboard or ASIC. This message is generated by the `portloopbacktest` command, if problems are found.

Recommended Action

Check for a faulty cable or deteriorated SFP. Replace the cable or SFP if necessary.

If the problem persists:

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-STATS (FTX)

Message

```
Critical DIAG-STATS (FTX), 1
```

Probable Cause

Port counter value did not match the number of frames actually transmitted. In this case, FTX = number of frames transmitted. This can be caused by a faulty cable or deteriorated SFP. It can also indicate deeper problems in the motherboard or ASIC. This message is generated by the `portloopbacktest` command, if problems are found.

Recommended Action

Check for a faulty cable or deteriorated SFP. Replace the cable or SFP if necessary.

If the problem persists:

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-TBRAM_INC_RWTEST

Message

```
Critical DIAG-TBRAM_INC_RWTEST, 1
```

Probable Cause

ASIC internal registers failed read-modify-write operation. This usually indicates an ASIC failure. This message is generated by the `turboramtest` command, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-TBRAM_INC_WTEST

Message

```
Critical DIAG-TBRAM_INC_WTEST, 1
```

Probable Cause

ASIC internal registers failed write operation. This usually indicates an ASIC failure. This message is generated by the `turboramtest` command, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-TIMEOUT

Message

```
Critical DIAG-TIMEOUT, 1
```

Probable Cause

For `portloopbacktest` and `crossporttest`:

Port failed to receive frame within timeout period.

For `centralmemorytest`:

Port failed to detect an interrupt within the timeout period.

This can be caused by a faulty cable or deteriorated SFP. It can also indicate deeper problems in the motherboard or ASIC.

Recommended Action

Check for a faulty cable or deteriorated SFP. Replace the cable or SFP if necessary.

If the problem persists:

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

DIAG-XMIT

Message

```
Critical DIAG-XMIT, 1
```

Probable Cause

Port failed to transmit frame. This usually indicates an ASIC failure. This message is generated by the `camtest`, `portloopbacktest`, or `spinsilk` commands, if problems are found.

Recommended Action

For the SAN Switch 2/16, replace the motherboard FRU.

For the SAN Switch 2/8, you must replace the entire switch.

Severity

Critical

FABRIC-RECONFIG

Message

```
Switch: <number>, Info FABRIC-RECONFIG, 4, fabric: <reason>
```

Probable Cause

The fabric has reconfigured due to an offline port. The reason can be one of the following:

- Fabric Merge: Merging two fabrics.
- Own ID Rcvd: A subordinate switch receives an EFP or EFP ACC that has a payload error, listing this switch as being the principal switch.
- Fabric Segment: Principal port became segmented.
- Offline: Principal port went offline.
- Unconfirmed domain: Switch was not able to get a domain ID. RDI ACC was never received.
- Rcv BF: Received Build Fabric (BF) command.
- HA: At F2 State: According to the Fibre Channel Specification, F2 is defined as the principal switch selection. If a failover occurs at this time, the switch is forced to restart principal switch selection.
- HA: No Upstream: After failover, the newly active fabric thinks it is subordinate, but there is no upstream.
- HA: bad EFP resp: Received an invalid EFP response.
- HA: RJT EFP resp: Received an EFP reject response in which this EFP was used for verifying the neighbor's domain list as part of fabric warm-start recovery. A reject occurs if the neighbor is reconfiguring or the neighbor's port is in a bad state.

- HA: DLST EFP resp: Received an EFP accept response with a different domain list.
- HA: PPRI EFP resp: Received an EFP accept response in which the response has a different principal switch priority number.
- HA: PWWN EFP resp: Received an EFP accept response in which the response has a different principal switch World Wide Name.
- HA: MAX EFP resp: An EFP to a neighbor failed to respond, and the fabric reached its maximum retry count for this neighboring switch.
- HA: Can't Snd EFP: Was not able to send an EFP.
- HA: Offline: A principal port went offline during fabric daemon's warm-start recovery.
- Principal Selection Mode: User has run the `fabricprincipal` command, forcing a fabric rebuild.
- D-list conflict: The principal switch received a domain list with domains additional to what the principal switch has already assigned, and the payload has the Pprincipal WWN and P\principal P\priority number as the principal switch.

Recommended Action

If the reconfiguration was unplanned, check for problems with the specified port. Some troubleshooting tasks include:

Verify that the port was not disabled, using the `portshow` command.

Verify that the port is cabled correctly.

Verify that the SFP has not deteriorated.

Severity

Information

SEC-PIDCHGERR, PID Change failed: Change Area failed

Message

```
Switch: <number>, Error SEC-PIDCHGERR, 2, PID Change failed:
Change Area failed. <reason>
```

Probable Cause

Either the defined or active policy could not be updated. If the policy database is very large, it might not be able to change the area because the new policy database exceeds the maximum size. This message can also be caused when the switch is short of memory. The <reason> value can be defined or active, or both policy sets were failed by the daemon. A negative value means that a policy set was failed by the daemon.

Recommended Action

Reduce the size of the policy database.

Severity

Error

SEC-PIDCHGERR, PID Change failed: Size check failed

Message

```
Switch: <number>, Error SEC-PIDCHGERR, 2, PID Change failed:
Size check failed. <reason>
```

Probable Cause

Either the new defined or active policy was too large after modifying the area ID. The <reason> value can be defined or active, or both policy sets were failed by the daemon. A negative value means that a policy set was failed by the daemon.

Recommended Action

Reduce the size of the specified policy database.

Severity

Error

SEC-PIDCHGERR, PID Change failed: Switch is busy

Message

```
Switch: <number>, Error SEC-PIDCHGERR, 2, PID Change failed:
Switch is busy. <reason>
```

Probable Cause

The switch security daemon is busy updating something else. The <reason> value can be defined or active, or both policy sets were failed by the daemon. A negative value means that a policy set was failed by the daemon.

Recommended Action

Wait a few minutes and then resend the transaction. Fabric-wide commands might take a few minutes to propagate throughout the fabric. Make sure to leave enough time so your commands do not overlap in the fabric.

If the problem persists, reboot or power cycle the switch.

Severity

Error

SEC-PIDCHGINFO

Message

```
Switch: <number>, Info SEC-PIDCHGINFO, 4, PID Change: Success
```

Probable Cause

The PID format of the switch was changed either to or from extended-edge PID. If DCC policies exist, all area ID values either increase or decrease by 16. The values wrap around after a port value of 128. If a DCC policy contains an area of 127 before changing to displaced PID, then the new area is 15 because of the wraparound.

Recommended Action

No action is required.

Severity

Information

SEC-SECCHANGE

Message

```
Info SEC-SECCHANGE, 4, text message
```

Probable Cause

A major security event has occurred. This message is for information purposes only, but you should verify that the event was planned. The text messages for individual events are:

- `secModeEnable`: Secure mode has been enabled.
- `secModeDisable`: Secure mode has been disabled.
- `secPolicyActivate`: A, B, C policies have been changed. (A, B, C are names for changed policies.)
- `secVersionReset`: Secure fabric version stamp has been reset.
- `secFCSFailover`: The primary FCS has failed over to a new switch.
- All password changes: A, B, C account passwords have been changed. (A, B, C are account names for which passwords are changed.)
- `configDownload`: A configdownload process has been executed that changed the security policy database.
- `secPolicySave`: A change to the security policy database has been saved.
- SNMP community string change: The admin has made a change to the SNMP community strings.

Recommended Action

Verify that the security event was planned.

If the security event was planned, no action is required.

Severity

Information

CONFIG-PIDCHANGE_EXTENDED_EDGE

Message

```
Switch: <number>, Warning CONFIG-PIDCHANGE_EXTENDED_EDGE, 3,
Switch PID format changed to Format 2 ('Extended Edge PID
Format').
```

Probable Cause

The PID format for the fabric has been changed to Format 2, extended-edge PID. For more information on PID format, refer to the *HP StorageWorks Fabric OS Version 3.1.x/4.1.x Procedures User Guide*.

Recommended Action

This message is for information purposes only. The entire fabric must be configured with the same PID format or the fabric will segment.

Severity

Warning

Documentation Updates

This section provides information on last-minute additions or corrections to documentation.

HP StorageWorks SAN Switch 2/16 Installation Guide

(Part Number: AA-RR84D-TE)

On page 82, Table 9:

The *Temperature* condition refers to the ambient air temperature at the air intake vents on the non-port side of the switch. You should change the *Temperature* condition within the "Condition" heading in the table to *Ambient Temperature* and also add the following note to the table:

Note: NOTE: The temperature inside the switch can be up to 75 degrees Celsius (167 degrees F) during switch operation.

On page 55, Table 5:

The following statement should be added to the Port Status LED information for when the port status is "offline" in Table 5, "Port Side LED Patterns During Normal Operation":

"When a Port Status LED indicator light is off, another possible hardware status is offline."

HP StorageWorks ISL Trunking Version 3.1.x/4.1.x User Guide

(Part Number: AA-RTSAC-TE)

On page 17, change the following statement:

"... ISL Trunking does not support the "LE", "L1", or "L2" `portcfglongdistance` modes. For information about these modes and Extended Fabrics in general, refer to the *HP StorageWorks Extended Fabrics Version 3.1.x/4.1.x User Guide*.

To:

"...Trunking is supported for normal E_Ports (referred to as L0 in the `portcfglongdistance` command) with LWL media up to 5km at the full speed permitted by the link. With LWL media, the throughput begins to fall off beyond 5km, due to normal latency effects. ISL Trunking does not support the "LE", "L1", or "L2" `portcfglongdistance` modes. For information about these modes and Extended Fabrics in general, refer to the *HP StorageWorks Extended Fabrics Version 3.1.x/4.1.x User Guide*.

HP StorageWorks Extended Fabrics Version 3.1.x/4.1.x User Guide

(Part Number: AA-RTSDC-TE)

On page 26, the following statement is incorrect:

"VC_Translation_Link_Init

Specify 1 to activate long distance link initialization sequence. This mode is used to initiate long distance connections. When configuring a long distance connection, the first port configured does not require this mode. When configuring the second port of a connection, use this mode to initiate communication between the ports."

Instead, you should specify 1 to activate the long-distance link initialization sequence for all ports, including the first port configured.

HP StorageWorks Zoning Version 3.1.x/4.1.x User Guide

(Part Number: AA-RS26C-TE)

On page 30, after the heading "Detailed Zone Configuration Procedures," add the following:

Note: The maximum number of items that can be stored in the zoning configuration database depends on the switches in the fabric, whether or not interop mode is enabled, and the number of bytes required for each item. The number of bytes required for an item depends on the specifics of the fabric but cannot exceed 64 bytes per item. At 64 bytes per item, you can have:

- 767 entries for a fabric with at least one 2.x or 3.x switch and interop mode disabled.
- 383 entries for a fabric with at least one 2.x or 3.x switch and interop mode enabled.
- 997 entries for a fabric consisting solely of 4.x switches and interop mode disabled.

You can use the `cfgSize` command to check both the maximum available size and the currently saved size. If you believe you are approaching the maximum, you can save a partially completed zoning configuration and use the `cfgSize` command to determine the remaining space."

HP StorageWorks Web Tools Version 3.1.x/4.1.x User Guide

(Part Number: AA-RS25C-TE)

On page 122, the following row should be added to Table 24, "Configure (Fabric Field) Descriptions":

Switch PID Format	Allows you to select a switch PID format from one of the following: ■ VC encoding ■ Format 0 (16-port encoding) – Native format ■ Format 1 (0-base, 256 port encoding) – Core PID format ■ Format 2 (16-base, 256 port encoding) – Extended-edge PID format

Also, remove the following row from Table 24:

VC Encoded Address Mode	Set this mode only if the fabric includes a StorageWorks SAN switch. When set, the frame source and destination address use an address format that is compatible with StorageWorks SAN switches.